Name _____ Date _____ Class _____

CHAPTER 7 STUDY GUIDE

Ionic Compounds and Metals

Section 7.1 Ion Formation

In your textbook, read about chemical bonds and formation of ions.

Use each of the terms below just once to complete the passage.

chemical bond	electrons	energy level	ions	noble gases
nucleus	octet	pseudo-noble gas formations		valence

The force that holds two atoms together is called a(n) **(1)**_____.

Such an attachment may form by the attraction of the positively charged

(2)_____ of one atom for the negatively charged

(3)_____ of another atom, or by the attraction of charged atoms,

which are called **(4)**_____. The attractions may also involve

(5)_____ electrons, which are the electrons in the outermost

(6)_____. The **(7)**_____ are a family of elements that

have very little tendency to react. Most of these elements have a set of eight outermost

electrons, which is called a stable **(8)**_____. The relatively stable electron

structures developed by loss of electrons in certain elements of groups 3, 4, 13, and 14 are

called **(9)**_____.

For each statement below, write *true* or *false*.

_____ **10.** A positively charged ion is called an anion.

_____ **11.** Elements in group 1 lose their one valence electron, forming an ion with a 1+ charge.

_____ **12.** Elements tend to react so that they acquire the electron structure of a halogen.

_____ **13.** A sodium atom tends to lose one electron when it reacts.

_____ **14.** The electron structure of a zinc ion (Zn^{2+}) is an example of a pseudo-noble gas formation.

_____ **15.** A Cl^- ion is an example of a cation.

_____ **16.** The ending *-ide* is used to designate an anion.

_____ **17.** Nonmetals form a stable outer electron configuration by losing electrons and becoming anions.

Section 7.2 Ionic Bonds and Ionic Compounds

In your textbook, read about forming ionic bonds and the characteristics of ionic compounds.

Circle the letter of the choice that best completes the statement or answers the question.

1. An ionic bond is
- **a.** attraction of an atom for its electrons.
- **b.** attraction of atoms for electrons they share.
- **c.** a force that holds together atoms that are oppositely charged.
- **d.** the movement of electrons from one atom to another.

2. The formula unit of an ionic compound shows the
- **a.** total number of each kind of ion in a sample.
- **b.** simplest ratio of the ions.
- **c.** numbers of atoms within each molecule.
- **d.** number of nearest neighboring ions surrounding each kind of ion.

3. The overall charge of a formula unit for an ionic compound
- **a.** is always zero.
- **b.** is always negative.
- **c.** is always positive.
- **d.** may have any value.

4. How many chloride (Cl^-) ions are present in a formula unit of magnesium chloride, given that the charge on a Mg ion is 2+?
- **a.** one-half **b.** one **c.** two **d.** four

5. Ionic bonds generally occur between
- **a.** metals.
- **b.** nonmetals.
- **c.** a metal and a nonmetal.
- **d.** noble gases.

6. Salts are examples of
- **a.** nonionic compounds. **b.** metals. **c.** nonmetals. **d.** ionic compounds.

7. A three-dimensional arrangement of particles in an ionic solid is called a(n)
- **a.** crystal lattice. **b.** sea of electrons. **c.** formula unit. **d.** electrolyte.

8. In a crystal lattice of an ionic compound,
- **a.** ions of a given charge are clustered together, far from ions of the opposite charge.
- **b.** ions are surrounded by ions of the opposite charge.
- **c.** a sea of electrons surrounds the ions.
- **d.** neutral molecules are present.